

AMENDMENTS TO THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1. (Canceled)

2. (Currently Amended) A hemodiafiltration apparatus according to claim [[1]] 37, ~~comprising a blood circuit for a single~~ wherein the one puncture needle comprises having a Y-shaped or T-shaped junction portion [[with]] and a puncture needle,[[;]] and two branch circuits branching off from the Y-shaped or T-shaped junction portion having a first branch in communication with the arterial side blood circuit and a second branch in communication with the venous side blood circuit, one of said branch circuits being an the arterial side branch circuit positioned on an upstream side of the hemodialyzer and another branch being a the venous side branch circuit positioned on a downstream side of the hemodialyzer during the circulation of blood, wherein a blood circuit having a pump segment for mounting a blood pump to one of the two branch circuits is used to enable hemodiafiltration with a single needle.

3. - 5. (Canceled)

6. (Currently amended) A hemodiafiltration apparatus according to claim 2, wherein ~~the blood of the patient is extracted into a blood circuit of one branch by providing for a fluid supply rate from the patient side to the hemodialyzer side of the blood pump in at least one of the blood circuits and a filtration rate through~~ the flow rate of blood in the hemodialyzer ~~[[being]] is equal to a blood filtration rate in the hemodialyzer to each other in the filtration operation.~~

7. (Canceled)

8. (Currently amended) A hemodiafiltration apparatus according to claim 2, wherein the blood ~~in the blood circuit of one branch~~ is returned to the patient by ~~providing for~~ adjusting the fluid supply rate from the hemodialyzer side to the patient side ~~of the blood pump in at least one of the blood circuits and a back-filtration rate through the hemodialyzer being~~ to be equal to each other in the ~~back-filtration operation~~ the back-filtration flow rate on the hemodialyzer side.

9. (Currently amended) A hemodiafiltration apparatus according to claim 2, wherein the blood pump ~~provided in at least one of the blood circuits~~ is stopped and back-filtration is performed, whereby back-filtration effects return of

~~[[the]] blood in the blood circuit of one branch is returned to the patient side by the back-filtration through the hemodialyzer in the back-filtration operation.~~

10. (Canceled)

11. (Currently Amended) ~~[[A]]~~ The hemodiafiltration apparatus according to claim 2, wherein ~~the blood of the patient is extracted into one branch extending toward the hemodialyzer side of the blood pump provided in at least one of the blood circuits from a single needle based on the ratio of the fluid supply rate from the patient side to the hemodialyzer side of the blood pump provided in at least one of the blood circuits to the filtration rate through the hemodialyzer in the filtration operation, and the~~ an amount of ~~[[the]]~~ blood corresponding to ~~[[the]]~~ a difference between the blood flow rate ~~[[of]]~~ provided by the blood pump and ~~[[the]]~~ a filtration rate is re-circulated from the one of the arterial side blood circuit and the venous side blood circuit ~~branch-side~~ where ~~[[no]]~~ the blood pump is not provided to the ~~branch-side~~ other of the arterial side blood circuit and the venous side blood circuit where the blood pump is provided.

12. (Currently Amended) ~~[[A]]~~ The hemodiafiltration apparatus according to claim ~~[[1]]~~ 37, wherein ~~all or a part of the blood in the blood circuit~~

is returned to the patient side ~~is through the venous side and the arterial side of the blood circuit~~ based on the ratio of the fluid supply rate to the patient side from the hemodialyzer side ~~to the patient side of the blood pump provided in at least one of the blood circuits~~ to the back-filtration rate ~~through~~ in the hemodialyzer ~~[[in]]~~ during the back-filtration operation.

13. - 14. (Canceled)

15. (Currently amended) ~~[[A]]~~ The hemodiafiltration apparatus according to claim ~~[[14]]~~ 42, wherein ~~[[the]]~~ water ~~removing~~ is removed from the blood, the water removal carried out by activating the water removing means and fluid discharge means in one or more of the filtration phase, back-filtration phase and a blank phase during which blank phase neither a filtration operation nor a back-filtration operation are carried out ~~set in an arbitrary ratio independently of the filtration/back-filtration fluid supply means.~~

16. (Currently amended) ~~[[A]]~~ The hemodiafiltration apparatus according to claim ~~[[14]]~~ 15, wherein the removal of water ~~removing~~ includes maintaining ~~an inside~~ a volume of fluid on the circuit patient side constant by

extracting the blood in an amount equal to an amount of the removed fluid from the patient side.

17. (Currently amended) ~~[[A]]~~ The hemodiafiltration apparatus according to claim ~~1~~, wherein ~~an amount of movement of the fluid by each operation, including the amount of filtrate or amount of reverse filtrate, is calculated from the product of a moving rate of the fluid by each operation, including the filtration rate or back-filtration rate, and a time required for each operation~~ 37, wherein each of the blood flow rate, filtration rate, and back-filtration rate is determined by the product of flow rate times the period of fluid flow.

18. - 20. (Canceled)

21. (Currently amended) A hemodiafiltration apparatus according to claim ~~[[1]]~~ 15, wherein the one puncture ~~hemodiafiltration is performed by using a single needle which is manipulated or controlled by inputting [[the]] an amount of [[the]] removed water and [[the]] a total amount of [[the]] a substitution fluid, which is equal to the total amount of filtrate which flows out by the a~~ through the filtration operation.

22. (Canceled)

23. (Currently amended) [[A]] The hemodiafiltration apparatus according to claim [[1]] 37, further comprising ~~polyfunctional~~ multifunctional filtration control means for control of which enables the filtration/back-filtration rates, and the duration of each of and ~~the times of~~ the filtration phase, the back-filtration phase and [[the]] a blank phase during which blank phase neither a filtration operation nor a back-filtration operation are carried out to be set to any values by means of one fluid supply means which can operate in normal and opposite directions in place of at least one filtration/back-filtration fluid supply means and at least one water removing and fluid discharge means in the hemodiafiltration apparatus.

24 - 36. (Canceled)

37. (New) A hemodiafiltration apparatus for performing extraction and reinfusion of blood alternately and intermittently by using one puncture needle, comprising:

a hemodialyzer in which blood and a dialysis fluid are brought into contact with each other through a porous membrane to purify blood;

an arterial side blood circuit in communication with a patient and the hemodialyzer;

a venous side blood circuit in communication with the patient and the hemodialyzer;

wherein the arterial side blood circuit, the venous side blood circuit, and a first side of the hemodialyzer comprise a patient side of the apparatus;

a dialysis fluid supply line through which a dialysis fluid is supplied to the hemodialyzer;

a dialysis fluid discharge line through which the dialysis fluid is discharged from the hemodialyzer;

a blood pump provided in one of the arterial side blood circuit and the venous side blood circuit, the blood pump providing a blood flow at a preselected flow rate and operable in a normal direction and an opposite direction;

a supply delivery means for supplying the dialysis fluid provided in the dialysis fluid supply line;

a discharge delivery means for discharging the dialysis fluid provided in the dialysis fluid discharge line;

a filtration/back-filtration fluid supply means provided in parallel with the supply delivery means for supplying the dialysis fluid, the filtration/back-filtration fluid supply means operable in normal and opposite directions, the

filtration/back-filtration fluid supply means providing a flow of fluid in the hemodialyzer at a preselected flow rate;

wherein the dialysis fluid supply line, the dialysis fluid discharge line; the supply delivery means, the discharge delivery means, and the filtration/back-filtration fluid supply means comprise a hemodialysis side of the apparatus; and

a control means for controlling the filtration/back-filtration fluid supply means by issuing a series of instructions to the filtration/back-filtration fluid supply means, the series of instructions comprising a cycle repeated a predetermined number of times, the instructions including: an instruction directing the filtration/back-filtration fluid supply means to operate in a flow direction opposite to a flow direction of a supply delivery means for supplying the dialysis fluid for a preset, predetermined period of time to perform the extraction of blood from the body of the patient; an instruction directing the filtration/back-filtration fluid supply means to stop operating for a preset, predetermined period of time to purify blood through diffusion by counterflow with the dialysis fluid; an instruction directing the filtration/back-filtration fluid supply means to operate in a flow direction that is the same as a flow direction of the supply delivery means for supplying the dialysis fluid for a preset, predetermined period of time that is shorter than the period of time for the

extraction of blood to perform a reinfusion of blood to the body of the patient; and an instruction directing the filtration/back-filtration fluid supply means to stop operating for a preset, predetermined period of time to purify blood through diffusion by a counterflow with the dialysis fluid.

38. (New) The hemodiafiltration apparatus according to claim 37, wherein the control means further controls the blood pump, and in association with the instruction directing the filtration/back-filtration fluid supply means to operate in a flow direction opposite to a flow direction of a supply delivery means for supplying the dialysis fluid for a preset, predetermined period of time to perform the extraction of blood from the body of the patient, the control means issues an instruction to the blood pump controlling the flow rate of the blood and the control means issues a further instruction to filtration/back-filtration fluid supply means controlling the rate of fluid supplied by the filtration/back-filtration fluid supply means, whereby a relationship between a filtration rate and the flow rate of blood is established, which further provides for selection of a channel for blood flow through one of the arterial side blood circuit and the venous side blood circuit.

39. (New) The hemodiafiltration apparatus according to claim 37, wherein the control means further controls the blood pump, and in association with the instruction directing the filtration/back-filtration fluid supply means to operate in a flow direction opposite to a flow direction of a supply delivery means for supplying the dialysis fluid for a preset, predetermined period of time to perform the extraction of blood from the body of the patient, the control means issues an instruction to the filtration/back-filtration fluid supply means directing that the rate of fluid supplied by the filtration/back-filtration fluid supply means be greater than the rate of fluid supplied by the blood pump, whereby blood is extracted from the patient using the arterial side blood circuit as a first channel and blood is extracted from the patient blood using the venous side blood circuit as a second channel that is in parallel to the first channel.

40. (New) The hemodiafiltration apparatus according to claim 37, wherein the control means further controls the blood pump, and, wherein, in association with the instruction directing the instruction directing the filtration/back-filtration fluid supply means to operate in a flow direction that is the same as a flow direction of the supply delivery means for supplying the dialysis fluid for a preset, predetermined period of time that is shorter than the period of time for the extraction of blood to perform the reinfusion of blood in the

body of the patient, the control means issues an instruction to the blood pump controlling the blood flow rate and the control means issues an instruction to the filtration/back-filtration fluid supply means controlling the filtration/back-filtration fluid flow rate, whereby a relationship between a back filtration rate and the blood flow rate is established, further providing for selection of a channel for blood flow.

41. (New) The hemodiafiltration apparatus according to claim 37, wherein the control means further controls the blood pump, and in association with the instruction directing the filtration/back-filtration fluid supply means to operate in a flow direction that is the same as a flow direction of the supply delivery means for supplying the dialysis fluid for a preset, predetermined period of time that is shorter than the period of time for the extraction of blood to perform the reinfusion of blood in the body of the patient, the control means issues an instruction to the filtration/back-filtration fluid supply means directing that the rate of fluid supplied by the filtration/back-filtration fluid supply means be greater than the rate of fluid supplied by the blood pump, whereby the patient is reinfused with blood using the arterial side blood circuit as a first channel and the patient is reinfused with blood using the venous side blood circuit as a second channel that is parallel to the first channel.

42. (New) A hemodiafiltration apparatus according to claim 37, further comprising a water removing means and fluid discharge means provided in the dialysis fluid discharge line.